

REMARKS

This is in response to the Office Action mailed December 28, 2005. In the of Office Action of December 28, 2005, pending claims 14-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bullock et al (U.S. Patent No. 5,488,478) in view of Kuhn et al. (U.S. Patent No. 5,592,246).

By this Amendment, claims 14, 20, 21, and 23 have been amended to recite that the method of measuring the geometry and surface evenness applies to one side of a moving metal strip. New claims 24-27, which are dependent on the respective claims 14, 20, 21, and 23 and recite the projection of a line pattern on the metal surface have been added.

Turning to the merits of the Office Action, Applicant respectfully submits that Kuhn et al. is not analogous prior art as required by MPEP § 2141.01(a) as it is not in the field of the Applicant's endeavor and not reasonably pertinent to the particular problem with which the claimed invention is concerned. Furthermore, Applicant respectfully submits that the combination of Bullock et al with Kuhn et al. is impermissible because there is no motivation, teaching or suggestion to combine the references. See MPEP § 2143.01. Finally, Applicant submits that the Office Action of December 28, 2005 fails to establish that there is a reasonable expectation of success in

combining the features of Kuhn et al. with the system of Bullock et al. Accordingly, Applicant submits that claims 14-23, as amended, and new claims 24-27 of the pending application would not have been obvious at the time the invention was made to a person having ordinary skill in the art.

I. Kuhn et al. is Not Analogous Prior Art as Required by

MPEP § 2141.01(a)

"In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of the applicant's endeavor or, if not, reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446 (Fed. Cir. 1992) see also MPEP § 2141.01(a). If the prior art is directed to a different purpose and different structures, other than the purpose addressed by the claimed invention, the inventor would have had less motivation or occasion to consider it. *In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992). These "differences in structure and function of the invention carry far-greater weight" when determining whether prior art is analogous or pertinent. MPEP § 2141.01(a) (II).

Kuhn et al. falls outside the realm of relevant prior art because it is neither within the applicant's field of endeavor nor pertinent to the particular problem, measuring surface

evenness of *moving strips* of metal. Kuhn et al. is faced with the problem of mapping the surfaces of "a transparent object such as anterior and posterior surfaces of a **patient's cornea** in a clinically useful time." (Abstract of Kuhn et al., first sentence; col. 1, lines 15-17). More specifically, Kuhn et al. is directed to mapping of the cornea of a human eye, as evident by Kuhn et al. consistent references to "a patient's cornea" (for example, at col. 1, line 17; col. 2, lines 64-65; col. 3, line 55; col. 4 line 38), "the cornea" (col. 2, lines 47-48; col. 3, line 9), "patient's eye" (col. 2, line 62; col. 3, lines 21-29), "corneal surface" (col. 1, line 31; col. 6, line 3; col. 6, line 18; col. 6, line 50), and "the patient" (col. 3 line 47). Even though Kuhn et al. states that its system could be used to map the surface an opaque object, Kuhn et al. only makes such a statement in passing and fails to identify how such a mapping could take place, what changes to the system in Kuhn et al. would need to be made, and whether the system would function on a scale larger than the human eye. Consequently, the problem addressed by Kuhn et al. is not reasonably pertinent to the problem with which invention of the pending claims is involved - **measuring the surface evenness of moving strips.**

Moreover, the structures and methods of Kuhn et al. are radically different from the structures and methods of the

claimed invention. Kuhn et al. includes, describes, and claims, for example, a means for "minimizing the movement of the patient's eye" 34, a relay lens 44, a light conduit 46 or coherent fiber bundle, a projection lens 48, a second light conduit 50, and a means for moving the light source 102. These structures are neither present in the primary reference being relied upon (e.g. Bullock et al) nor in the specification of the present application.

Unlike the present invention, Kuhn et al. describes and claims methods that require the object (the patient's eye or cornea) to be stationary, such as a method requiring aligning "the patient's eye in the region of intersection of the projection and detection axes" (col. 4, lines 34-36), "sequential scans using multiple patterns by projecting each onto the cornea" (col. 6, lines 17-20) or "mechanically moving a single light pattern 100 across the corneal surface" (col. 6, lines 59-63). (See also col. 3, lines 21-29 which describe a means for "minimizing the movement of the patient's eye").

In contrast, the invention as recited in the claims of the present application addresses measuring moving metal strips. In the production environment (typically a steel mill) these strips move between 15m/s and 20m/s. (See Bullock et al, col. 4 line 18: "the maximum strip speed of the mill, 18 m/s"). Kuhn et al.

is not structurally similar to, does not operate under the same conditions and does not function like the invention as recited in claims 14-27. See *In re Clay*, 476 F.2d at 660. Consequently, Kuhn et al. is not analogous prior art, and cannot be used as a basis for the rejection of the Applicant's invention. See MPEP § 2141.01(a).

As Kuhn et al. is non-analogous art, Bullock et al., alone, does not disclose all of the elements of the recited claims. Thus, Applicant respectfully submits that claims 14-23, as amended, and new claims 24-27 are patentable over the applicable prior art of record.

II. There is No Motivation or Suggestion to Combine Bullock et al with Kuhn et al.

When applying 35 U.S.C. § 103, one must adhere to the following axioms: (1) *"the references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;"* and (2) *"the reference must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention."* See MPEP § 2141 (emphasis added), MPEP § 2143 and *Hodosh v. Block Drug Co. Inc.*, 786 F.2d 1136, 1143 (Fed. Cir. 1986). Taken as a whole, Bullock et al and Kuhn et al. fail to suggest the desirability, and thus the

obviousness, of combining these systems to arrive at the invention as recited in claims 14-27.

As noted by the Examiner, Bullock et al fails to disclose the use of a transparency as a means of creating a projection. Bullock et al is also silent as to creating changeable patterns with the transparency and selecting a pattern that is suitable for the respective measuring situation.

In the Office Action, Kuhn et al. was identified as prior art that creates a projection with the aid of a transparency. The Office Action then simply concluded that "it would have been obvious... to use a light source which projects with the aid of transparency in the system of Bullock et al." "However, identification in the prior art of each individual part claimed is **insufficient** to defeat patentability of the whole invention." *In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000) (emphasis added) .

Many inventions arise from combinations of old elements or parts found in the prior art. *In re Kotzab*, 217 F.3d at 1369. To prevent the impermissible use of hindsight when analyzing a possible case of obviousness, one must cast his mind back to the time of invention, to consider the thinking of ordinary skill in the art at that time, to be "guided only by the prior art references and then accepted wisdom in the field." *Id.* Thus, a

rejection based on § 103(a) must demonstrate that one skilled in the art confronted with the same problems as the inventor with no knowledge of the claimed invention would select the elements from the cited prior art references for the combination in the manner claimed.

Assuming arguendo that Kuhn et al. is analogous prior art, there is still no motivation, suggestion or teaching of making the specific combination that was made by Applicant. Contrary to the statement in the Office Action, Kuhn et al. fails to "recognize that improved accuracy would be expected when the aid of transparency of Kuhn is included in the system of Bullock." First, Kuhn et al. fails to teach how the use of a transparency improves accuracy over a system which does not utilize a transparency. In fact, Kuhn et al. is silent as to the benefits of using a transparency and discloses several different possibilities for projecting light and dark patterns. (See col. 6, lines 37-58).

Additionally, Bullock et al fails to suggest why the use of a transparency as a means of creating a projection or creating changeable patterns with the transparency would be beneficial as Bullock et al fails to mention the use of transparencies.

While the Office Action points to column 3, line 38-40 of Kuhn et al. to support the statement that "creating a pattern of

light and dark areas would be desirable feature," this passage does not explain why it would be a desirable feature or why the creation of light and dark areas using a transparency would be desirable. Far less, this passage (col. 3, lines 38-40) does not teach, suggest, or motivate one to combine the use of a transparency with the system as disclosed in Bullock et al to measure the surface evenness of moving strips. Simply stated, the hypothetical person of skill in the art is interested in measuring the surface evenness of one side of a moving strip. He would have little if any reason to consider the art involving the measuring of a three-dimensional and stationary object, as disclosed in Kuhn et al.

The conclusions that "it would have been obvious... to use a light source which projects with the aid of transparency in the system of Bullock et al" and "Kuhn recognize that improved accuracy would be expected when the aid of transparency of Kuhn is included in the system of Bullock" are unsupported by the teachings of the references. "A statement that modification of the prior art to meet the claimed invention would have been well within the ordinary skill of the art at the time the claimed invention was made because the references relied upon teach that all aspects of the claimed invention were individually known in the is not sufficient to establish a *prima facie* case of

obviousness without some objective reason to combine the teachings of the references." See MPEP § 2143.01(IV) (emphasis added) and *In re Kotzab*, 217 F.3d at 1371.

The Office Action has not provided any objective reasons or evidence which would suggest the desirability to combine the transparency of Kuhn et al. with the system set forth in Bullock et al. The mere fact that reference can be combined does not render the combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680 (Fed. Cir. 1990) and MPEP § 2143.01(III). As the Office Action did not set forth a *prima facie* case of obviousness based on objective evidence, Applicant respectfully submits that claims 14-23 and new claims 24-27 are patentable.

III. There is no Demonstrable Expectation of Success in Combining Bullock et al with Kuhn et al..

Even if Kuhn et al. is taken to belong to the same field of endeavor as the invention recited in claims 14-23 (and new claims 24-27), the technology of Kuhn et al. cannot be removed, such as a puzzle piece, and fit into the system disclosed in Bullock et al without identifying some reasonable expectation of success of combining the prior art references to establish a *prima facie* case of obviousness. MPEP § 2143.02. The Office

Action of December 28, 2005 failed to identify any evidence of a reasonable expectation of success of combining the different systems Kuhn et al. and Bullock et al. As a result, the Office Action failed to establish a prima facie case of obviousness.

First, Kuhn et al. discloses the use of a transparency in the circumstances of a stationary object, namely the human eye (col. 3, lines 21-29). Without the benefit of the present invention recited in claims 14-27, there is no other understanding that the technology described in Kuhn et al. would work with a moving strip of metal, or for that matter **any** moving object. In fact, there is no evidence, teaching or suggestion that would lead one to conclude that they could successfully combine the use of transparency with a stationary object, as in Kuhn et al., with systems that measure the surface or moving strip, as in Bullock et al.

Second, Kuhn et al. discloses that the light pattern created by the transparency is to be taken up by a bundle of coherent fibres and is to be conducted from the LCD to a location near the patient. Taking figures 2 and 5 and the normal size of a human eye to be about 0.01 m, it is clear, that this light bundle will end within 0.01 m of the object to be measured. Thus, Kuhn et al. discloses that when a light pattern created by a transparency is used, it is necessary to bring this

light pattern very close to the object to be measured. However, moving a metal strip in strip processing-plans can vibrate with an amplitude of 0.05 m. Clearly, the person of ordinary skill would have understood that the system of Kuhn et al. requires bringing the light to the object to be measured within 0.01 m, and will have no application to a moving metal strip (as described in Bullock), as the fibre bundle will frequently be destroyed by the vibrating moving metal strip.

Kuhn et al. also describes the use of relay lens 44 to demagnify the light pattern created by the transparency because the area of the pattern created by the LCD (the transparency) is larger than the cornea to be mapped. (col. 3, lines 49-51). Kuhn et al. further includes the use of light conduits 46 to conduct the demagnified light pattern from the LCD to a location near the patient. (col. 3, lines 45-52). Finally, the light pattern passes through a projection lens 48. However, there is no evidence that combining these features of Kuhn et al. with vastly different system of Bullock et al would yield a successful result. Moreover, there is no evidence that using only the transparency of Kuhn et al., without a relay lens, light conduit, or projection lens, could be combined successfully with the system of Bullock et al.

Kuhn et al. also discloses that the measurement to be taken is on the order of magnitude of the human eye (roughly 0.01m x 0.01m). Kuhn et al. also discloses the use of a relay lens 44 to demagnify the pattern as "the area of the pattern created by the LCD is larger than the cornea to be mapped." (col. 3, lines 40-43). Thus, the combination of Kuhn et al. and Bullock et al suggests that the LCD has to be larger than the area to be mapped. However, metal strips that move through metal processing-plants have lengths of several hundred meters and a width of approximately two meters (2m). The combination of Kuhn et al. with Bullock et al would not only be unsuccessful but it would also be impracticable to create and use such a large LCD or transparency.

Finally, Kuhn et al. discloses two approaches to obtaining a complete image of the (small) area in which Kuhn's technology is applied, namely to sequentially scan through multiple patterns, projecting each onto the cornea (column 6, line 19 to 20) or to serially project light patterns, when using only one projected pattern, but in that case to move the single light pattern across the corneal surface by using mechanical mover.

In both cases, it is clear, that even in the small area of 0.01 m times 0.01 m (the area of a human's eye) it is necessary to perform a series of projections onto this surface with the

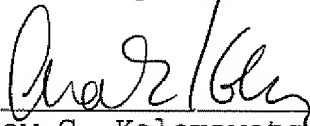
approach Kuhn has taken. This might explain, why Kuhn et al. requires the eye to be fixed in one position. Because the pattern has to be produced on the eye surface several times in a series, the eye should not move between those projections, as this will lead to erroneous results. Again, this shows, that one of skill in the art considering Kuhn et al. would not have thought that such a technology would work with moving metal strips that moves with speeds of 15 to 20 m/sec.

For all of these reasons, the combination of Kuhn et al. with the system as disclosed in Bullock et al is improper, as there is no evidence to establish a reasonable expectation that the combination would be successful. Consequently, the Office Action of December 28, 2005 has failed to set forth a *prima facie* case of obviousness regarding claims 14-23.

IV. Conclusion

In view of the above arguments, Applicant respectfully submits that the methods recited in claims 14-27 are neither shown nor fairly suggested by the art of record. Applicant would welcome (and affirmatively requests) a phone interview with the Examiner prior to issuance of a first action on the merits. Favorable consideration and allowance of the claims are respectfully solicited.

Respectfully submitted,



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